IN THE CLAIMS

1. (Currently amended) A method of extracting n wherein n is a natural number greater than or equal to 2, model parameter sets in order to statistically simulate the operation and the performance of an integrated circuit design, the method comprising ~~the steps of~~:

designating n points in one or more wafer and forming an elementary device of the integrated circuit at each of the n points;

creating an I-V characteristic curve by measuring the I-V characteristic of the elementary device formed at one point among the n points;

using the I-V characteristic curve to extract~~ing~~ a first model parameter set which ~~converges on~~ reproduces the I-V characteristic curve within a predetermined error range;

measuring a main characteristic data value of the elementary device formed at a kth, wherein k is a natural number from 2 to n, point among the n points; and

extracting a kth model parameter set which converges on the main characteristic data value within a predetermined error range,

wherein n model parameter sets are extracted by repeating the steps of measuring the main characteristic data value until k is equal to n, increasing k by one, and extracting the kth model parameter set.

2. (Original) The method of claim 1, wherein the elementary device is a transistor and the main characteristic data are one or more selected from the group consisting of a threshold voltage Vth, a drain saturation current IDsat, a maximum conductance Gmmax, a drain current Ioff when a gate-source voltage is 0V, a junction capacitance Cj, and an overlap capacitance Cov of the transistor.

3. (Original) The method of claim 2, wherein the main characteristic data is the threshold voltage Vth and the drain saturation current IDsat of the transistor.

4. (Original) The method of claim 1, wherein the step of extracting the kth model parameter set comprises the steps of:

inputting the first model parameter set as initial values of model parameters which will become the kth model parameter set;

calculating a main characteristic data value by substituting the initial values for the calculating equation of the main characteristic data value;

determining whether the calculated main characteristic data value converges on the measured main characteristic data value within a predetermined error range;

extracting the initial values as the kth model parameter set when it is determined that the calculated main characteristic data value converges on the measured main characteristic data value; and

changing the initial values when the difference between the calculated main characteristic data value and the measured main characteristic data value deviates from the predetermined error range and repeating the steps of calculating the main characteristic data value and determining whether the calculated main characteristic data value converges on the measured main characteristic data value within a predetermined error range.

5. (Original) The method of claim 4, wherein the initial values are changed only in model parameters having physical attributes.

6. (Original) The method of claim 1, further comprising the step of arbitrarily changing the measured main characteristic data value of the elementary device formed at an m, wherein m is an arbitrary natural number from 1 to n, point and extracting an mth model parameter set which converges on the arbitrarily changed main characteristic data value within a predetermined error range, in order to analyze the influence that the change in the main characteristic data value of the elementary device has on the performance of the integrated circuit design.

7. (Currently amended) A method of simulating the operation and the performance of an integrated circuit design, the method comprising the steps of:

forming an elementary device of the integrated circuit at a predetermined point on a wafer;

creating an I-V characteristic curve by measuring the I-V characteristic of the elementary device;

using the I-V characteristic curve to extract~~ing~~ a first model parameter which ~~converges on~~ reproduces the I-V characteristic curve within a predetermined error range;

measuring a main characteristic data value of the elementary device;

arbitrarily changing the main characteristic data value and extracting a second model parameter set which converges on the changed main characteristic data value within a predetermined error range; and

inputting the first and second model parameter sets to a simulation program, simulating the performances of the integrated circuit based on the first and second model parameter sets, and comparing the simulated performances with each other, thereby analyzing the influence that the change in the main characteristic data value of the elementary device has on the performance of the integrated circuit design.

8. (Original) The method of claim 7, wherein the elementary device is a transistor, the main characteristic data are one or more selected from the group consisting of a threshold voltage Vth, a drain saturation current IDsat, a maximum conductance Gmmax, a drain current Ioff when a gate-source voltage is 0V, a junction capacitance Cj, and an overlap capacitance Cov of the transistor, each influence that the change in the main characteristic data value has on the performance of the integrated circuit design being analyzed by individually changing one value among the main characteristic data or combining two or more values with each other to produce change or combination results for purposes of extracting the second model parameter set.

9. (Original) The method of claim 7, where the simulation program is SPICE.

10. (Currently amended) A method of simulating the operation and the performance of an integrated circuit design, comprising the steps of:

forming an elementary device of the integrated circuit at a predetermined point on a wafer;

measuring a main characteristic data value of the elementary device;

using the I-V characteristic curve to extract~~ing~~ a first model parameter set which ~~converges on~~ reproduces the main characteristic data value within a predetermined error range;

arbitrarily changing the main characteristic data value and extracting a second model parameter set which converges on the changed main characteristic data value within a predetermined error range; and

inputting the first and second model parameter sets to a simulation program, simulating the performances of the integrated circuit, and comparing the simulated performances with each other,

thereby the influence that the change in the main characteristic data value of the elementary device has on the performance of the integrated circuit is analyzed.

11. (Original) The method of claim 10, wherein the elementary device is a transistor, the main characteristic data are one or more selected from the group consisting of a threshold voltage Vth, a drain saturation current IDsat, a maximum conductance Gmmax, a drain current Ioff when a gate-source voltage is 0V, a junction capacitance Cj, and an overlap capacitance Cov of the transistor, each influence that the change in the main characteristic data value has on the performance of the integrated circuit being analyzed by individually changing one value among the main characteristic data or combining two or more values with each other to produce change or combination results for purposes of extracting the second model parameter set.

12. (Original) The method of claim 10, wherein the simulation program is SPICE.